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SHOE SOLE CONSTRUCTION

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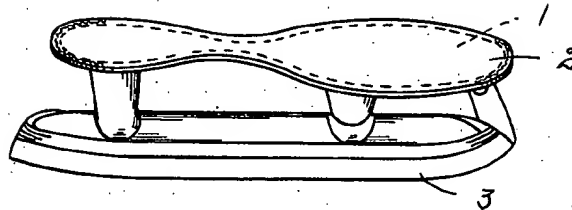


Fig. 1.

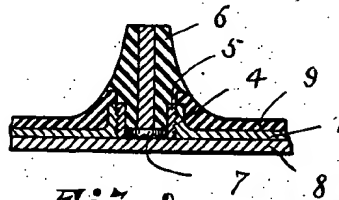


Fig. 2.

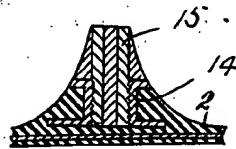


Fig. 3.

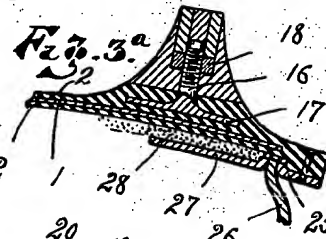


Fig. 3a.

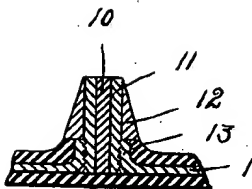


Fig. 4.

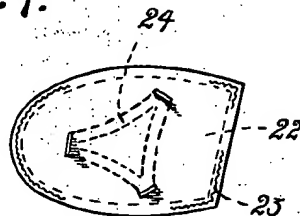


Fig. 6.

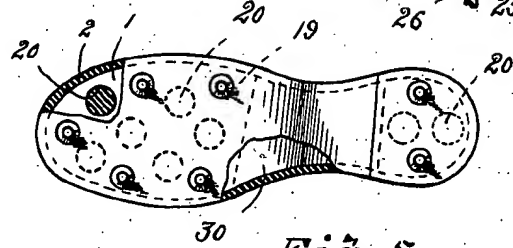


Fig. 5.

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SHOE SOLE CONSTRUCTION

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2 Claims. (Cl. 36—2.5)

This invention relates to improvements in shoe construction and has special reference to a novel form of shoe sole for same.

The principal object is to provide a preformed composite sole for attachment to a shoe upper.

Another object is to provide such a sole having in combination therewith protruding elements, such, for example as skates, calks, cleats, or the like.

Other objects and advantages of the invention will appear in the following description thereof.

Referring now to the accompanying drawing, forming part of this application, and wherein like reference characters indicate like parts:

Figure 1 is a perspective view of a combined skate and shoe sole, comprising the invention.

Figure 2 is a central vertical section of a fragmental portion of the improved sole and cleat or calk.

Figures 3 and 3A are similar views of a portion of the composite sole with modifications of calks or cleats thereupon.

Figure 4 is a similar view of a still further modification of assembly of the sole and calk.

Figure 5 is a bottom view of one of the soles with calks attached thereto illustrating one manner of lightening the construction of the assembly.

Figure 6 is a plan view of a half sole with calks attached thereto.

I am aware that metal plates have been placed, as a separate unit, between the leather inner and outer soles of a shoe, and therefore the use of a metal plate, broadly, within the sole of a shoe I do not claim as novel. However the plate as heretofore used is exposed to moisture and rust and is subject to certain misplacements which have proven destructive to the sole of the shoe and to the function of the plate. Not only are these and other disadvantages overcome in the fused union of the present invention, but many advantages in addition are attained.

In my preferred arrangement, and as here illustrated, the steel plate of the sole of the shoe is illustrated at 1, and is preferably wholly surrounded with rubber as shown at 2. This rubber extends beyond the entire marginal edge of the plate to provide sufficient room for conveniently sewing the same to the upper of the shoe, and is vulcanized to the plate so as to prevent any possibility of friction or squeak between the two elements and to insure a fused moisture-proof union of same.

It is well known that inherent resiliency is essential within the sole of a shoe and particularly is this true in athletic shoes, and to provide just the proper resiliency for shoes designed for various uses the present invention is particularly adapted and provides assurance as to the continuity of such resiliency since the rubber,

being waterproof, does not change its resilient properties due to dampness or misuse as is the case with leather or other substitutes therefore. For example in athletic shoes of the ordinary type when even a metal plate is used in connection therewith, if they become wet or water-soaked and subsequently dried out, the leather changes to an entirely different character than when first used, cracking, stiffening, shrinking and warping, thus damaging the sole as a cleat base. In fact a repetition of such experiences frequently results in the total ruination of a shoe.

In Figure 1, 3 represents a skate which may be attached directly to the under side of the metal plate 1 as by spot welding or the like in which event the plate is vulcanized or fused to the rubber subsequent to such formation, and the attachment to the upper of the shoe is made subsequent to the vulcanizing process, it being readily seen that the selection of size and shaping of the sole to conform with the shape of the individual's foot may be accomplished prior to such attachment to the upper of the shoe, providing material convenience in the fitting of same. In fact this may be practiced in the making of common shoes to order, without a skate, calk, or the like attached thereto. Furthermore when deemed advisable the vulcanizing or fusing of the rubber to the plate may only occur on the outer surface thereof, and other filling and cushioning elements employed on the opposite side; such a construction being illustrated in Figure 2 of the drawing.

In Figure 2 a novel form of calk and plate structure is shown in that through the latter are punched holes for the reception of the calk, they being struck upwardly to form a marginal wall as at 4 about the hole. The interior of the wall 4 is screw threaded for the reception of the sleeve or ring 5 which is in turn vulcanized to a rubber calk 6 or otherwise suitably attached to some form of calk or other device to rigidly and removably attach the calk or device to the sole. In this form it may be desirable to serrate the lower edge of the ring 5 as shown at 7 so that when the calk is screwed home the serrated part of the ring will engage the inner leather lining as at 8, if such is used.

I have shown in Figure 2 the rubber 9 which is vulcanized to the plate 1 as being bulged upwardly about the calk receiving orifices to form a smooth frustoconical-shaped base for the calk, and the walls of the calk are made to uniformly coincide with the margins of this base. In this form the calk is shown as being of rubber or other composition, which in some instances, may be desirable. Of course the rubber may be of any density desired to suit the purpose for which

it is used, while, of course, a calk of any other material may be employed, if preferred.

In Figure 4 I have shown a similar construction of plate with a like calk receiving socket but in this instance I have shown a calk composed of fabricated material of different wearing qualities. For example the core 10 of the calk shown in Figure 4 may be of less wear resisting material than the surrounding tubular portion 11, so that the calk because of wear will not become sharp or pointed, always presenting only the flattened end thereof as illustrated in the drawing. The outer form maintaining portion of the calk illustrated at 12 may be of less wear resisting material than the tube 11, although functioning only as a guard or support to the tube, and the lower end of the tube may be externally screw threaded for engagement within the socket 13 of the plate 1.

A calk similar to that just described is shown at 15 in Figure 3 of the drawing screw-threadedly connected to a spool shaped ferrule 14. In this form the calk base 14 is not attached directly to the plate 1, but is vulcanized within the rubber at the wearing face of the plate and slightly spaced from the plate thus providing a rubber cushion between the plate 1 and base 14, thus providing a much more resilient and yieldable calk than that which is directly connected to the plate.

In the form shown at the right hand end of Figure 3 a large flanged base 17 is provided having a central projecting screw threaded pintle 16 formed thereon and incorporated within the rubber covering of the sole, with the cushion between the flange 17 and plate 1 as shown at the opposite end of the figure. The calk cooperating with this has incorporated therein a nut 18 which is designed to screw threadedly receive the pintle 16 and rigidly and resiliently attach the calk to the shoe sole.

In Figure 5 I have illustrated a sole including the heel portion, and while the plate is illustrated in dotted lines at 19, there are also indicated circular areas at 20 which may be stamped out of the plate to lighten same or vary its yieldability but not ruin its stabilizing properties, and further insuring a dependable job of vulcanizing as the rubber would extend through and fill these openings. In this case the instep 30 of the plate may be somewhat narrowed if preferred, or the connection between the half sole and the heel might be of canvas or other stiffening material in place of the narrow portion 30 to prevent ill shaping of the shoe after wear.

In Figure 6 is illustrated a half sole with the steel plate being shown at 21, the projection of the vulcanized rubber around the edge thereof at 23, through which area the stitching occurs. To the ground engaging surface of this sole may be attached in any desired manner a triangularly shaped cleat such as are common in athletic shoes as indicated at 24, or the latter may be fixed to the plate as by spot welding or the like and thus incorporated within the shoe and surrounded by the rubber during the vulcanizing or fusing process.

Another novel feature of my composite shoe sole is that of the convenience in providing for attachment to the upper of the shoe in that a channel or recess may be formed about the outer edges of the sole for reception of the bound edges of the welt, upper, and inner sole, as clearly seen

in Figure 3 of the drawing, and in which instance 25 represents the welt, 26 the leather of the upper, and 27 the insole, while at 28 is represented the filler which may be of cork or sponge rubber or the like; in fact the rubber which forms the union with the plate 1 may be extended to provide such cushioning means in lieu of the cork as shown.

From the above it will be apparent that I have provided an entirely new form of shoe sole construction having marked advantages for example to the manufacturer of athletic shoes in that he has no cleats or cleat bases to attach as a separate manufacturing process. Furthermore the invention provides the desired stiffness of sole for any specialized use, together with the unparalleled wear resistance of soft rubber; the sole is light in weight, and provides a stronger method of attaching the bases for removable cleats which will prevent the loosening and twisting defects so prevalent in the bases as now attached. The cheapness of manufacture due to the unit assembly will at once be recognized by those versed in the art.

It will be noted in Figures 2, 3 and 4, the calks are illustrated as being removable, the sole having integral enlargements formed therein within which are vulcanized the calk or tip receiving means, and these enlargements therefore form the base of the calk. It is entirely possible, and perhaps desirable, however, to vulcanize within enlargements of the sole of the shoe complete, integral, unitary cleats or calks, leaving the tip projecting therefrom, and when these are worn, the entire sole is removed and a new one applied to the shoe. This, however, is not believed as convenient as the provision of the removable tip or calk as herein illustrated and described.

As previously stated in respect to the showing in Figure 5, where the instep portion 30 of the reinforcing plate is spoken of as being narrowed and stiffened, it is obvious that the same may be made to form an arch support when desired, and the same being formed integral with the heel and toe portion of the reinforcement provides ideal means for shaping the sole to fit individual requirements in the way of an arch support.

It is to be understood that the surface of the inner portion of the rubber covering 2 may be of what is known as raw rubber to assist in its adherence to the inner sole of the upper or whatever filler is being used.

Where in the description and claims, the word "rubber" is employed, I desire to be understood as meaning rubber or other material having general characteristics resembling rubber.

Having thus described my invention, what I claim and desire to secure by Letters Patent, is:

1. In an athletic shoe sole construction, the combination of a metal stiffening plate, a layer of rubber fused to said plate and thereby forming a composite sole, a plurality of integral projections formed on said layer of rubber and adapted to serve as cleat bases, and cleat attaching means within said projections.

2. In an athletic shoe sole construction, the combination of a metal stiffening plate, a rubber sole fixed to said plate, a plurality of projections formed on said rubber sole adapted to serve as cleat bases, screw threaded means within said projections, and cleats screw-threadedly attached to said projections.

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